WHAT IS CLAIMED IS:

1. A method for enhancing information derived from acoustically inspected samples, comprising:

deriving an acoustic image of a sample; and

generating a visual superposition of one or more additional images of the sample selected from the group consisting of :

optical image,

second acoustic image in a different sized field of view form said acoustic image, or in a different mode of acquisition,

infrared image,

X-ray image, and

electron beam image.

2. The method defined by claim 1 wherein said superposed images are rendered in a transparent mode wherein one image can be seen through the other.

3. The method defined by claim 1 wherein said superposed images are rendered in an opaque mode, and wherein an image overlying another image is partially cut away to expose the underlying image.

4. A method for enhancing information derived from acoustically inspected samples, comprising:

using an ultrasonic probe, deriving an acoustic image of a sample interior area or volume; and

generating a visual superposition of one or more additional images of the sample selected from the group consisting of :

optical image,

second acoustic image in a different sized field of view from said acoustic image, or in a different mode of acquisition,

infrared image,

X-ray image, and

electron beam image.

5. The method defined by claim 4 wherein said superposed images are rendered in a transparent mode wherein one image can be seen through the other.

6. The method defined by claim 4 wherein said superposed images are rendered in an opaque mode, and wherein an image overlying another image is partially cut away to expose the underlying image.

7. The method defined by claim 4 wherein one of said additional images is an optical image of the sample exterior rendered in a mode such that impedance anomalies exhibited in said acoustic image are visible concurrently with the optical image of the sample exterior.

8. The method defined by claim 7 wherein the sample is a PC board, wherein the optical image is a digital photograph, and wherein the transparent mode is employed to visualize both additional images simultaneously.

9. The method defined by claim 4 wherein one of said additional images is an infrared image of the sample rendered in a mode such that impedance anomalies exhibited in said acoustic image are visible concurrently with the infrared image of the sample.

10. The method defined by claim 4 wherein one of said additional images is an electron optical image of the sample exterior rendered in a mode such that impedance anomalies exhibited in said acoustic image are visible concurrently with the electron optical image of the sample exterior.

11. The method defined by claim 4 wherein one of said additional images is an X-ray or transmission acoustic absorption image of the sample interior rendered in a mode such that

impedance anomalies exhibited in said acoustic image are visible concurrently with the X-ray or transmission acoustic absorption image of the sample interior.

12. The method defined by claim 4 wherein one of said additional images is a second acoustic image generated at the same or different depth as said acoustic image, but with a larger or smaller field of view.

13. The method defined by claim 12 wherein the second acoustic image is an image of the sample exterior rendered in a mode such that impedance anomalies exhibited in said acoustic image of the sample interior area or volume are visible concurrently with the acoustic image of the sample exterior.

14. The method defined by claim 12 wherein the second acoustic image is a second image of the sample interior spaced from the first-named acoustic image and rendered in a mode such that impedance anomalies exhibited in said acoustic images of the sample interior area or volume are visible concurrently.

15. The method defined by claim 4 wherein a first of said additional images is an optical image of the exterior of the sample and a second of said additional images is a infrared image of the sample such that impedance anomalies exhibited in said acoustic image of the sample interior area or volume are visible concurrently with the optical and infrared images.

16. The method defined by 15 wherein the sample is a printed circuit board.

17. A method for enhancing information derived from acoustically inspected samples, comprising:

deriving an acoustic image of a sample;

deriving one or more additional images of the sample selected from the group consisting of :

optical image,

second acoustic image in a different sized field of view from said acoustic image, or with a different mode of acquisition,

infrared image,

X-ray image, and

electron beam image; and

generating a visual superposition of the one or more additional images of the sample with the acoustic image.

18. The method defined by claim 17 wherein said superposed images are rendered in a transparent mode wherein one image can be seen through the other.

19. The method defined by claim 17 wherein said superposed images are rendered in an opaque mode, and wherein an image overlying another image is partially cut away to expose the underlying image.

20. A method for enhancing information on acoustically inspected samples, comprising:

using an ultrasonic probe, deriving an acoustic image of a sample interior area or volume;

deriving one or more additional images of the sample selected from the group consisting of :

optical image,

second acoustic image in a different sized field of view from said acoustic image, or in a different mode of acquisition,

infrared image, X-ray image, and

electron beam image; and

generating a visual superposition of the one or more additional images of the sample with the acoustic image.

21. The method defined by claim 20 wherein said superposed additional images are rendered in a transparent mode wherein one image can be seen through the other.

22. The method defined by claim 20 wherein said superposed additional images are rendered in an opaque mode, and wherein an image overlying another image is partially cut away to expose the underlying image.

23. The method defined by claim 20 wherein one of said additional images is an optical image of the sample exterior rendered in a mode such that impedance anomalies exhibited in said acoustic image are visible concurrently with the optical image of the sample exterior.

24. The method defined by claim 23 wherein the sample is a PC board, wherein the optical image is a digital photograph, and wherein the transparent mode is employed to visualize both images simultaneously.

25. The method defined by claim 20 wherein one of said additional images is a infrared image of the sample rendered in a mode such that impedance anomalies exhibited in said acoustic image are visible concurrently with the infrared image of the sample.

26. The method defined by claim 20 wherein one of said additional images is an electron optical image of the sample exterior rendered in a mode such that impedance anomalies exhibited in said acoustic image are visible concurrently with the electron optical image of the sample exterior.

27. The method defined by claim 20 wherein one of said additional images is an X-ray or transmission acoustic absorption image of the sample interior rendered in a mode such that impedance anomalies exhibited in said acoustic image are visible concurrently with the X-ray or transmission acoustic absorption image of the sample interior.

28. The method defined by claim 20 wherein the second acoustic image is an image of the sample exterior rendered in a mode such that impedance anomalies exhibited in said acoustic

image of the sample interior area or volume are visible concurrently with the acoustic image of the sample exterior.

29. The method defined by claim 20 wherein the second acoustic image is a second image of the sample interior spaced from the first-named acoustic image and rendered in a mode such that impedance anomalies exhibited in said acoustic images of the sample interior area or volume are visible concurrently.

30. The method defined by claim 20 wherein a first of said additional images is an optical image of the exterior of the sample and a second of said additional images is a infrared image of the sample such that impedance anomalies exhibited in said acoustic image of the sample interior area or volume are visible concurrently with the optical and infrared images.

31. The method defined by 30 wherein the sample is a printed circuit board.

32. A method for enhancing information derived from acoustically inspected samples, comprising:

deriving first electrical signals characterizing an acoustic image of a sample;

deriving one or more additional signals characterizing images of the sample selected from the group consisting of :

optical,

acoustic,

infrared,

X-ray, and

electron beam;

processing first signal and said one or more additional signals to develop a display signal;

using said display signal to generate a visual display; and

processing said display signal to create special visual effects in said display.

33. The method defined by claim 32 wherein said processing of said display signal is selected from the group consisting of edge enhancement, filtering, interpolation, cross-correlation, and shadowing.

34. A method for enhancing information on acoustically inspected samples, comprising:

using an ultrasonic probe, deriving first electrical signals characterizing an acoustic image of a sample interior area or volume;

deriving one or more additional electrical signals characterizing one or more images of the sample selected from the group consisting of :

optical,

acoustic,

infrared,

X-ray, and

electron beam;

processing said first signal and said one or more additional signals to develop a display signal;

using the display signal to generate a visual display; and

processing said display signal to create special visual effects in said display.

35. The method defined by claim 34 wherein one of said additional images is an optical image of the sample exterior.

36. The method defined by claim 35 wherein the sample is a printed circuit board, and wherein the optical image is a digital photograph.

37. The method defined by claim 34 wherein one of said additional images is an infrared image of the sample.

38. The method defined by claim 34 wherein one of said additional images is an electron optical image of the sample.

39. The method defined by claim 34 wherein one of said additional images is an X-ray image or transmission acoustic image of the sample interior.

40. The method defined by claim 34 wherein a first of said additional images is an optical image of the exterior of the sample and a second of said additional images is a infrared image of the sample.

41. The method defined by claim 34 wherein said processing of said display is selected from the group consisting of edge enhancement, filtering, interpolation, cross-correlation, and shadowing.

42. The method of claim 1 including altering said visual superposition by employing a process selected from the group consisting of edge enhancement, filtering, interpolation, cross-correlation, and shadowing.

43. The method of claim 4 including altering said visual superposition by employing a process selected from the group consisting of edge enhancement, filtering, interpolation, cross-correlation, and shadowing.

44. The method of claim 17 including altering said visual superposition by employing a process selected from the group consisting of edge enhancement, filtering, interpolation, cross-correlation, and shadowing.

45. The method of claim 20 including altering said visual superposition by employing a process selected from the group consisting of edge enhancement, filtering, interpolation, cross-correlation, and shadowing.